

A windshield survey of the nonhighway land indicated 40 acres of cropland, 50 acres of woodland and 30 acres of cleared noncropland. The cleared noncropland appeared to be cropland at one time but was now grown up in volunteer vegetation. Cropland was in a mixture of tobacco, soybeans, and wheat (figure 3). The average annual sediment yield from the nonhighway land was estimated to be 433 tons as shown in Table 1. This estimate was based on sediment yields from monitoring studies in the NC Piedmont (Hill, 1991). Because climatic conditions vary considerably between years, the actual amount of sediment contributed during the period of monitoring could differ greatly from those reported in Table 1.

Table 1. Estimated Sediment Contributions from Nonhighway Land.

Description	Area	Erosion	Sediment Delivery	Total Sediment to Crane Creek
	ac	ton/ac-yr	%	ton/yr
Tributary from NE				
Cropland	30	11	40	132
Wooded	50	0.1	40	2
Noncrop cleared	47	1	40	19
Land from West				
Cropland	60	11	40	264
Cleared	40	1	40	16
Total Nonhighway				433

Description of Monitoring: A stage-discharge relationship was developed for both monitoring stations to facilitate discharge measurement (figure 4). The upstream relationship was based on 8 discharge measurements at stages ranging from 0.59 to 2.8 ft and discharges from 0.83 to 73 cfs. The downstream relationship was based on 7 discharge measurements ranging from 0.65 to 2.67 ft and discharges from 10.4 to 73.1 cfs. Most of the discharge measurements were conducted within an hour of each other during nonstorm discharge periods when the measured discharge at the upstream site was very similar to the downstream. In order to estimate discharge for stages that were outside of the range of measurements, the cross section of the creek at both sites was surveyed. Cross sectional area for each stage was computed from the survey and an estimate of the velocity was obtained from the closest measurement available and used to compute the discharge. The stage-discharge relationship for moderate to low discharges at both monitoring sites had to be revised during the fall of 2003 due to shifting of formerly deposited sediment in the creek bottom after the high flows of August and September, 2003.

The stage-discharge relationship was programmed into the samplers so that discharge was estimated continuously. The samplers were programmed to collect a sample for every 4 to 16 million gallons depending on the current discharge rate. Individual samples were recovered from the machine every 2 weeks and composited into one sample for lab analysis. The upstream sampler was flooded in early August 2003, which damaged its flowmeter. The flowmeter was repaired and the sampler reactivated by 10/1/03 as is indicated by the gap in the data.